WRITERS OF THE STORM

WFO PUEBLO / SOUTHEAST COLORADO NEWS

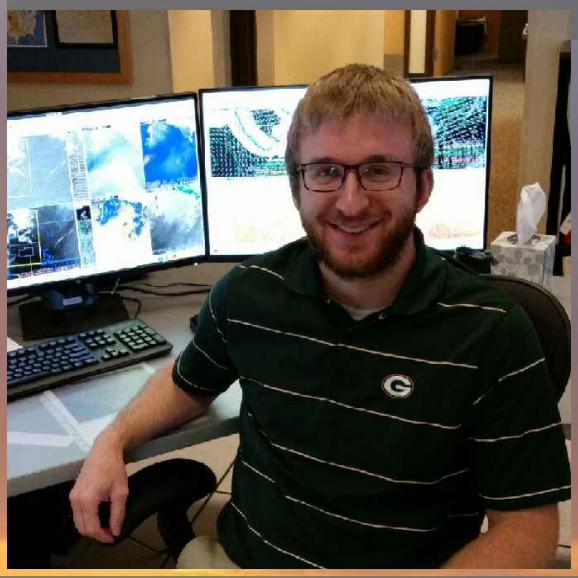
VOLUME 8 MAY 2017

In this issue:

New Faces at NWS Pueblo

Klint Skelly…

I was born in California in August of 1990 and moved to Minnesota in June of '97. I started my collegiate meteorology career at St. Cloud State University in St. Cloud, MN in 2011. After graduating in 2014, I began graduate school at Plymouth State University in New Hampshire. My first job after graduate school was working at the Network Control Facility (NCF) at the NOAA Headquarters in Silver Spring, Maryland. After a few months of 12 hour overnight shifts, and a job offer from WFO Pueblo, I fled Maryland for the Rocky Mountains and a career involving forecasting! My hobbies include hiking, craft brew drinking and playing video games (I am an all-around nerd). I have a lovely girlfriend named Laura, who is soon to hold a Master's Degree in Environmental Science and Policy. My career aspirations with the National Weather Service including becoming an IMET and eventually a Warning Coordination Meteorologist.



Bill Line…

Bill began working at the NWS Pueblo as an Intern Meteorologist in October, 2016. Bill brings with him a unique expertise in satellite meteorology, which is especially valuable now with the recent availability of data from the new GOES-16 satellite. Prior to joining NWS Pueblo, Bill worked at the University of Oklahoma and Storm Prediction Center in Norman, OK as a Satellite Liaison. In that role, he interacted closely with NWS forecasters, training them to use newly available satellite imagery and products. Bill earned both his Bachelor's and Master's degrees from the University of Wisconsin - Madison. As a graduate student at Wisconsin, he conducted satellite meteorology related research. Bill is originally from southeast Pennsylvania, where he experienced several major winter storms growing up, leading to his interest in meteorology. As if starting a new job and moving to a new state weren't enough, Bill and his wife, Alita, also recently had their first child. The three of them enjoy spending time in the outdoors with their dog, Reggie, and are excited to be living in southern Colorado.

Hydrologist Winter Sojourn to Region

By Tony Anderson

Tony Anderson, the Service Hydrologist here in Pueblo recently returned from a 112 day deployment and temporary promotion to the Central Region Headquarters. Vacancies in the Hydrology program there had created a backlog of work. So, from early December until March 31, Tony took up residence in a Kansas City hotel and reported for duty at the Central Region Headquarters. Under the supervision of the Deputy Chief for Hydrologic Services Wendy Pearson, Tony picked up projects and tasks that would otherwise have gone unaddressed.

The greatest challenge for Tony was expanding his view of NWS operations. Service Hydrologists make decisions that affect their office and their little part of the country. Most of the time there is a directive, manual, or policy you can look at to help make a decision. Decisions at the regional level do not usually come with such clear guidance. When you make recommendations at Regional Headquarters, you have to consider how they will affect dozens of offices and if they have national implications. Some decisions may inform or even become policy documents. The consequences of your decisions take on a much greater scale.

Projects Tony worked on during his winter in Kansas City included a number of aspects of the Hydrologic Ensemble Forecast System (HEFS). He provided regional representation on the Implementation Team, provided comments on the web-page content and design, and worked on developing the training for HEFS.

Tony also became involved in developing training materials for FLASH and FFMP to help forecasters with Flash Flood Guidance. Wendy had established a team to develop 1-page reference materials for forecasters using FFMP or the new FLASH products available. Tony became part of the team and shepherded the projects to completion. The team was tremendous. Beyond submitting comments on the documents and arranging conference calls, Tony mostly just kept things from getting in the way of completion. The team took care of the rest. The result is three reference products that should make forecasters better, faster, and more efficient at protecting lives and property from flash flooding.

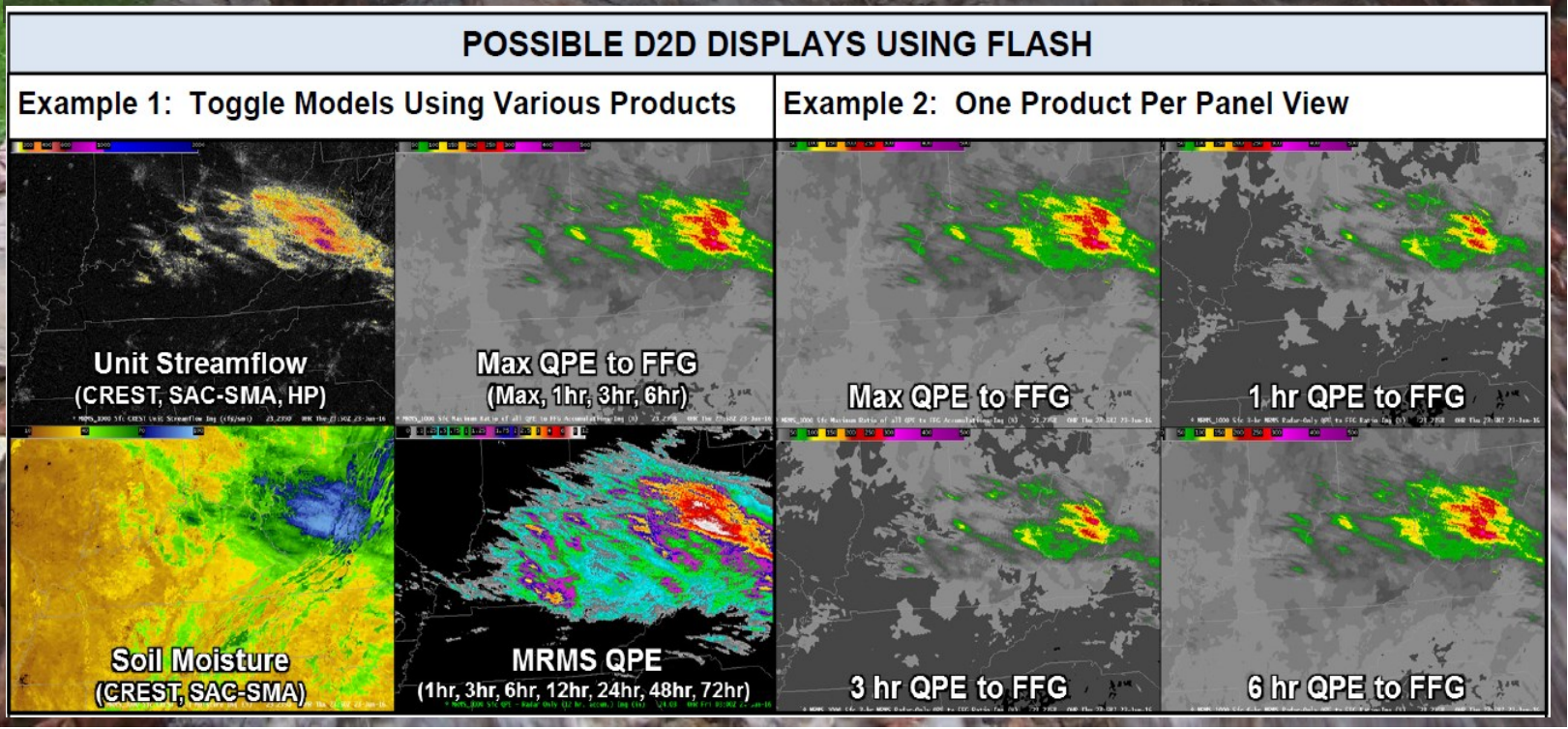
Nothing was so surprising as the amount of time our regional staff spends on the phone and in meetings. There were almost daily conference calls on development and maintenance issues plus fielding calls from field offices looking for help. Coordinating dozens

Hydrologist Winter Sojourn to Region

of development projects, pushing and cajoling maintenance requests through National Headquarters, and keeping informed of what 38 Forecast Offices and two River Forecast Centers are doing requires great patience and a very good telecommunications system. Tony was amazed at the creative energy within the hydrologic community. Keeping track of all the national, regional, and local projects was a constant challenge. Trying to avoid duplication of efforts and preventing offices from working at cross purposes kept life interesting.

The best part of the experience was working directly for and with Wendy Pearson. She was a tremendous boss who pointed Tony in the direction she wanted and then let him go. Her ability to keep track of dozens of projects is amazing. Tony and Wendy acted as hydrologic sounding boards for one another. As Tony put it, "We often met at the end of the day to go over notes or plans. We exchanged a lot of good ideas and information during those meetings. We were both used to being the only hydrologist in the office; it was good to have someone else who could talk water."

Tony says, "I learned a different side of the National Weather Service. I saw it from a different perspective and gained some understanding of how things work at the regional and national level. Plus, I got to work with some fantastic people at CRH. I had my misgivings about going, but now I am very glad that I went. It was a fantastic opportunity."



10-year Commemoration of the Holly Tornado

By Tom Magnuson

During the evening of March 28th 2007, a strong tornado ripped through the heart of Holly, Colorado. The quick-hitting tornado, which tragically took two lives, was rated an EF3, with maximum winds around 150 mph. The tornado literally hit without warning, as Doppler Radar did not properly depict the intensity of this shallow severe storm. Many improvements have been made to NWS Doppler Radar during the last 10 years, which gives warning forecasters more flexibility in monitoring storms, and a better look at real-time data to issue timely severe thunderstorm, tornado, and flash flood warnings.

On March 28th, the 10-year anniversary of the tragic Holly tornado, NWS Pueblo's Warning Coordination Meteorologist, Tom Magnuson, along with other county officials presented a look-back of the last 10 years. Tom gave the National Weather Service perspective on the tornado, which was an eye-opener for many of the 180 people in attendance. At exactly 7:58 p.m., a minute of silence was observed. In addition, Tom did a SKYWARN weather spotter training class. Tom answered the many weather questions after the formal presentations.

10-year Commemoration of the Holly Tornado

Continued…

- Significant tornado events in March are highly unusual for Colorado
- The tornado developed at approximately 7:54 p.m. approximately two miles south of Holly, reaching its peak intensity of EF3 (Enhanced Fujita Scale) on the northeast edge of Holly, and occasionally along a 12 mile stretch north of Holly

- The tornado occurred for nearly 30 minutes, with a damage path 28 miles long and a width up to nearly 900 yards (about 1/2 mile)
- The tornado caused two fatalities, injured eight others, and produced substantial damage in Holly
  - These fatalities were the earliest tornado related fatalities on record in Colorado
  - EF3 tornado produced the first tornado-related fatalities in Colorado since 1960
- 164 single family residences in Holly were impacted, with 23 destroyed, and 18 with substantial damage
- With regard to severe weather season, this was the earliest tornado rated at EF2 or greater and was the earliest EF3 on record (previously April 27, 1923)

the central region-regional operations center

By Kyle Mozley

Meteorologist Kyle Mozley spent the month of February in Kansas City at Central Region Headquarters, manning the Regional Operations Center (ROC). The ROC is tasked with 4 main priorities: Support Central Region Field Offices (like NWS Pueblo), Support Regional Level Partners (FEMA, USACE, DoD, etc.), Support NOAA and NWS Leadership at the Regional and National Levels and Facilitate the Communication of Decision Support Services throughout NWS Central Region. This was done through communication via phone and chat with the various 38 Central Region NWS Offices. Kyle also coordinated with National Centers such as the Weather Prediction Center, so that all of the individual offices brought one, consistent message to the public. One example was making sure offices were on the same page with a blizzard that was forecast across the Dakotas into the Great Lakes. He also produced reports about heavy snow, high winds and flooding across western Wyoming which were briefed to NWS Headquarters. While on duty, Kyle produced forecasts for 3 FEMA Regions serviced by Central Region, along with leading a morning weather briefing for Central Region Headquarters staff and visitors.

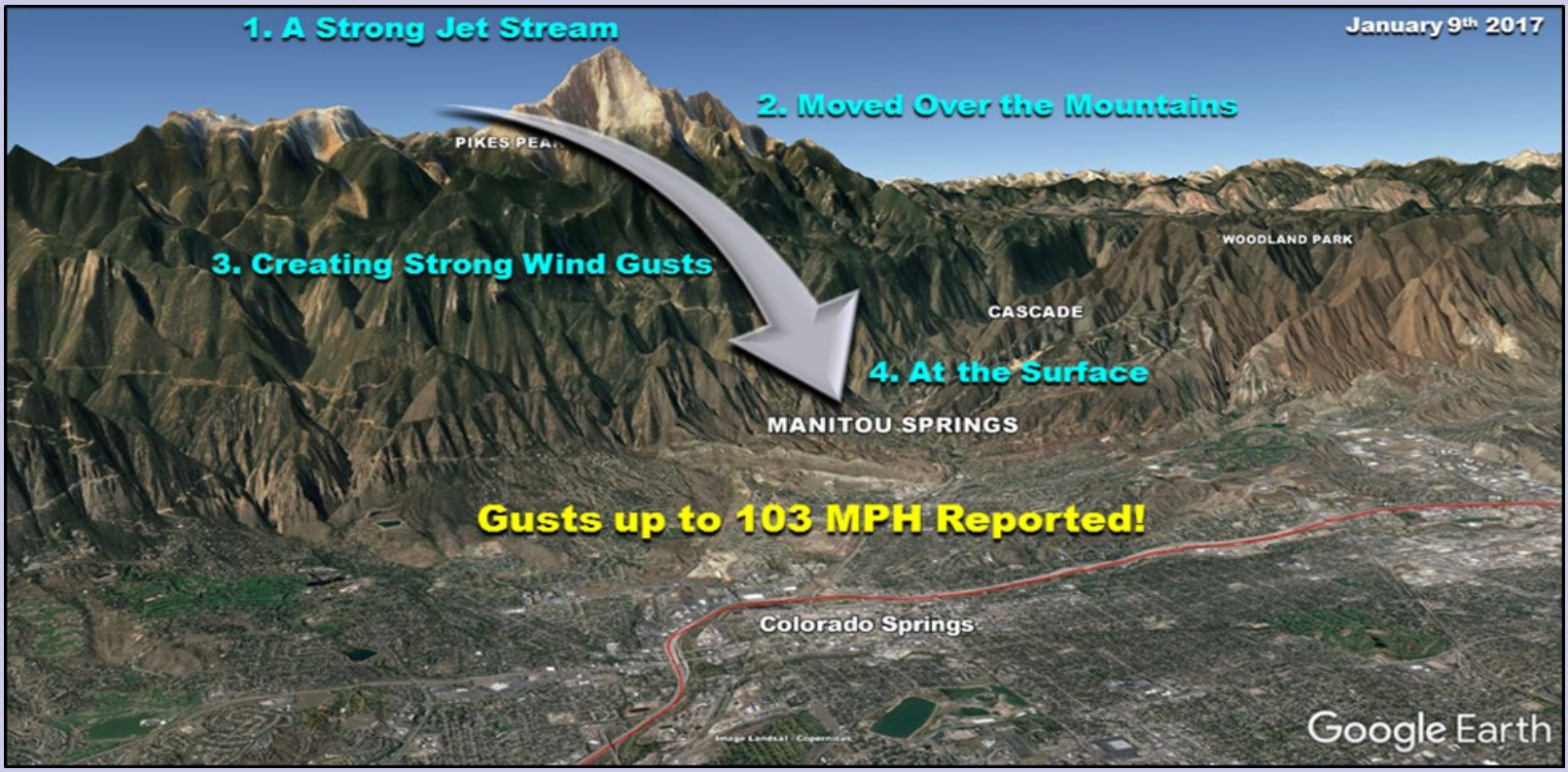
While, in Kansas City, Kyle was able to visit several weather service facilities in the area. He visited the National Weather Service in Pleasant Hill, the Missouri River Basin River

Forecast Center, the Center Weather Service Unit and the Aviation Weather Center. In addition, Kyle participated in the Integrated Warning Team (IWT) workshop hosted by NWS Pleasant Hill which included over 100 participants in the warning enterprise, including media, Emergency Managers, Fire and Law Enforcement Officials. Much was learned and shared with your local NWS Pueblo office.

Everyone Knows It's Windy!

By Larry Walrod

On January 9th, widespread damaging winds up to 103 mph occurred along the east slopes of the Rampart, Wet and Sangre de Cristo Mountains. The Colorado Springs Airport recorded a gust to 80 mph, establishing a new record for the airport. Cheyenne Mountain Air Station, just west of Colorado Springs, recorded a gust to 101 mph. A gust to 103 mph was recorded by the public 1 mile north of Security. These strong winds caused damage to trees, property and power lines along the east slopes of the mountains with widespread damage reported in Colorado Springs and Aguilar. The winds also caused a major disruption to commercial transportation, overturning multiple tractor-trailers along Interstate 25 from the Palmer Divide all the way south to New Mexico. Interstate 25 ended up closed to commercial trucks most of the day. This windstorm was impressive not only because of the wind speeds it produced but also because of the extent and duration of the storm.



Top 10 Peak Wind Gusts Reported January 9th

Time (MST)	County	Location	Speed (MPH)
1/9/17 12:00	El Paso	1 N Security	103
1/9/17 7:42	El Paso	6 SSW Colo Springs	101
1/9/17 4:39	El Paso	Manitou Springs	99
1/9/17 12:00	Pueblo	Colorado City	97
1/9/17 11:52	Pueblo	1 ENE Colorado City	94
1/9/17 1:55	Las Animas	4 S Weston	89
1/9/17 12:07	Pueblo	3 NNW Colorado City	89
1/9/17 10:52	Pueblo	1 NNE Colorado City	88
1/9/17 8:35	El Paso	3 ENE Manitou Springs	84
1/9/17 8:39	Otero	7 NW Higbee	84

Everyone Knows It's Windy! (Part 2)

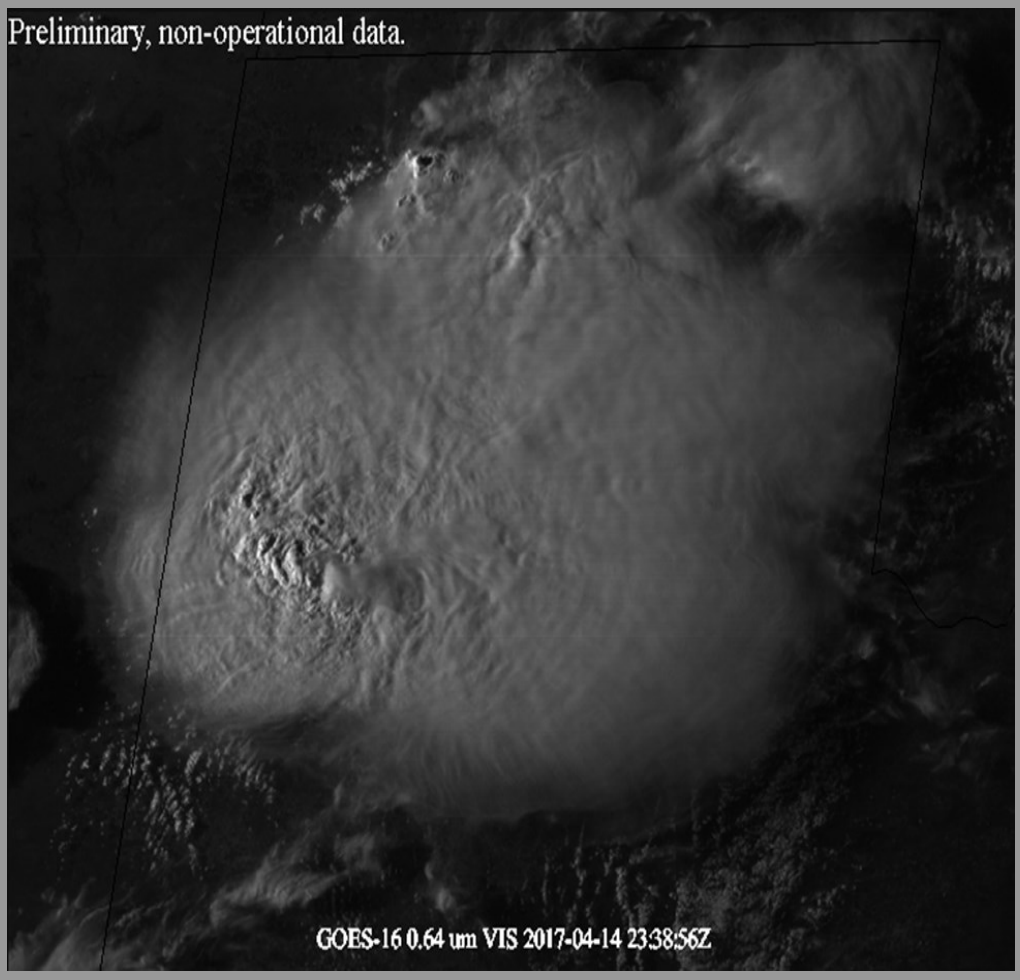
On March 24th, another powerful windstorm hit southern Colorado. This time the greatest impact of the winds was felt in the Pueblo area, an area that was largely spared in the January 9th storm. The storm caused millions of dollars of damage across the city, toppling trees and fences, damaging roofs, crushing cars and knocking out power to tens of thousands of utility customers. The North Shore Marina at the Pueblo Reservoir suffered some of the worst damage. Many of the docks were damaged or flipped over. Many boats were damaged and some were even partially or totally submerged. Park managers at the reservoir estimated damages could reach as high as 1 million dollars. The massive cleanup and repair effort for this storm is still ongoing.

Top 10 Peak Wind Gusts Reported March 24th

Time (MDT)	County	Location	Speed (MPH)
3/24/17 1:13	Pueblo	6 NE Blende	75
3/24/17 10:59	Baca	4 SW Campo	73
3/24/17 3:25	El Paso	7 WNW Truckton	70
3/23/17 22:58	El Paso	3 W Fountain	68
3/23/17 23:02	Pueblo	5 NE Blende	67
3/24/17 3:01	El Paso	3 W Fountain	67
3/24/17 6:29	El Paso	7 WNW Truckton	67
3/23/17 22:40	El Paso	2 S Peterson AFB	65
3/24/17 8:54	El Paso	3 W Fountain	64
3/24/17 4:23	Las Animas	4 E Thatcher	63

Photos Courtesy of KOAA News

NWS meteorologists recently received a major upgrade to the satellite technology we use daily for analyzing the weather. The first in a series of four new geostationary weather satellites, GOES-R (now GOES-16), launched on November 19, 2016. The new series of weather satellites includes two earth-pointing instruments that will greatly enhance our ability to observe weather across the Western Hemisphere: the Advanced Baseline Imager (ABI) and the Geostationary Lightning Mapper (GLM). Imagery from the GOES-16 ABI became available to forecasters at NWS offices on March 2, 2017. Compared to the imager on the previous generation of GOES satellites, the ABI provides us with imagery five times more often with four times the spatial detail and three times more channels. This combination of improvements allows us to observe various atmospheric phenomena (thunderstorms, wildfires and hurricanes) earlier and in much greater detail than was previously possible. The GOES-16 GLM detects total lightning activity in near-real-time. Lightning data from the GLM allows forecasters to easily track fluctuations in thunderstorm strength and provide improved guidance to the public during outdoor events when lightning might be a threat.

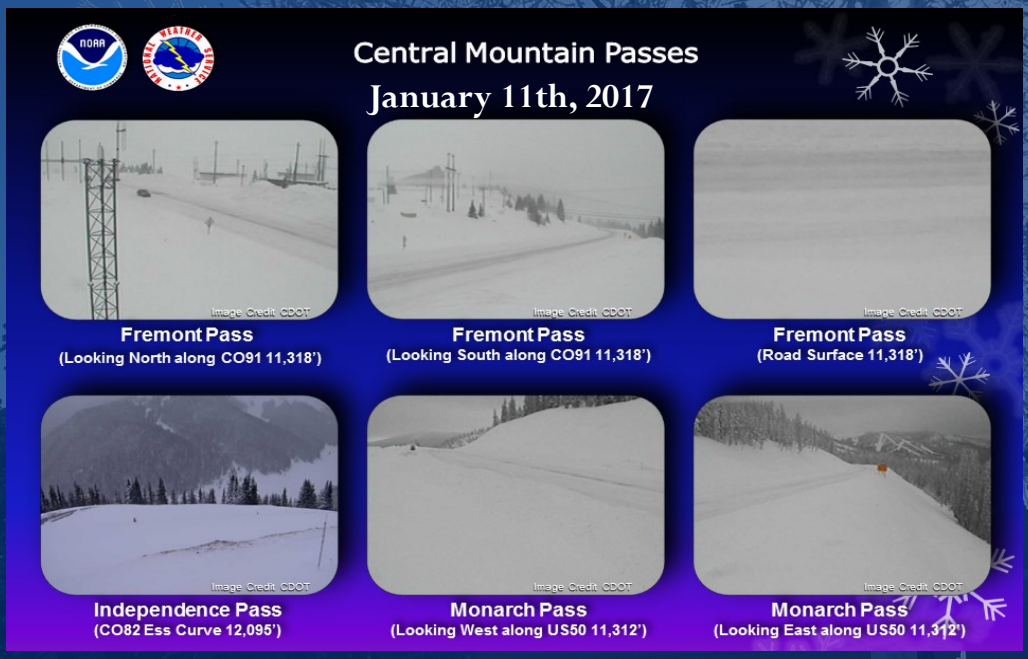


A Winter's Tale

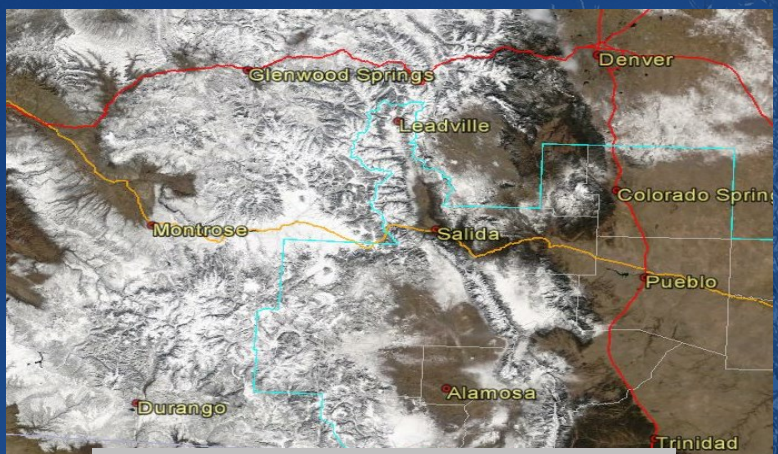
By Eric Petersen

Winter and Spring Recap (2016-2017)

Winter started out rather dry across much of south central and southeast Colorado, as the very dry and warm conditions seen over the region in the fall continued through November and into the first half of December. By late December, the weather pattern began to change, bringing a series of storms to the mountains, especially along the Continental Divide, while eastern mountain slopes and the plains remained relatively dry. An unusually stormy period then continued in January, with frequent storms dropping impressive amounts of snow over the mountains, especially during the first half of the month. A particularly strong weather system the first week of the month produced widespread heavy snow, with 2 to 3 feet occurring over the higher elevations of Lake and Chaffee counties, including 23 inches at Leadville and Maysville. This same storm also dropped 42 inches of snow at the Wolf Creek Ski Area during a 3 day period from January 4th to the 6th. By the end of January, mountain snowpack in the Arkansas and Rio Grande basins had climbed to much above average levels, a rather remarkable rise from the extremely low snow pack seen only 6 week earlier in mid-December. Over the eastern mountains and plains, the main weather feature for January was wind, with several high wind events producing damage and power outages throughout the month. One of the strongest wind events in the past several years struck on January 9th, with Colorado Springs and El Paso County seeing wind gusts of 80 to 100 mph, with the strongest gusts occurring over the eastern slopes of Cheyenne Mountain. Damage included downed power poles, causing numerous power outages to tens of thousands of customers; uprooted trees; roof damage; and numerous overturned semi-trailers along Interstate 25. Unfortunately, 2 fatalities were recorded in Colorado Springs due to flying debris.

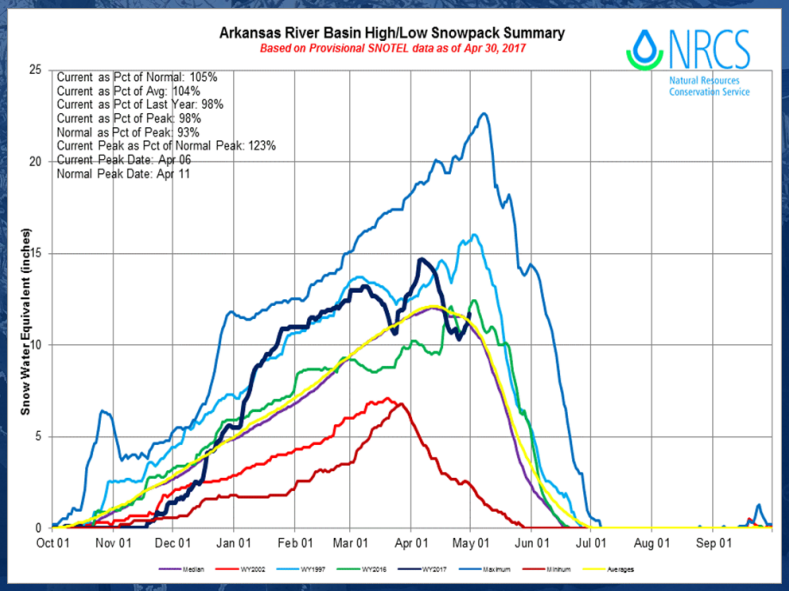


Dry and mild weather then returned from late January through late March, with Alamosa, Colorado Springs and Pueblo all experiencing one of their warmest February through March periods on record. Fortunately, snowpack over the mountains remained above average into mid-March as the extremely heavy snows of late December and January hung on over the higher elevations. A series of storms then brought widespread rain and snow to the region from late March into early April, especially across the eastern mountains and plains. A particularly strong storm moved through the area from March 23rd to the 25th, with winds of 70-80 mph bringing widespread tree damage and power outages to Pueblo county and severe damage to boats and docks at Pueblo Reservoir. The combination of strong winds and heavy snow with this storm also produced widespread and long-lasting power outages over portions of the eastern mountains, especially across the higher terrain near and west of Aguilar.



Visible Satellite Snow Cover March 1st,

After a brief break in mid-April, wetter weather quickly reappeared for the last 10 days of the month, with another very strong storm occurring from April 27th to the 30th. This storm brought widespread heavy, wet snow to the region, especially along and south of the Arkansas River. Snowfall totals of up to 3 feet were reported over the Wet Mountains, with over 2 feet of snow and large drifts over the plains in Baca and southern Prowers counties. Tree damage over much of the area was extensive, with power outages across the city of Pueblo and out across the eastern plains.



Snowpack levels for the Arkansas River Basin. The dark blue line is the reported level for this winter from Oct 1 until April 30th, while the yellow line is the seasonal average. The red line at the bottom is the record minimum snowpack, and the blue line at the top is the record maximum. The graph shows dry conditions in the fall and early winter of 2016, with a rapid increase in snowpack from about mid-December until late January, then a dry period in February and March were the snowpack only slowly rises. The storms of late March and April bring a new peak in snowpack in early April, with a fairly typical seasonal decline evident by late in the month.

FIRE SEASON 2017 EXPECTATIONS AND THE FLASH FLOOD RISK FROM 2016 FIRES

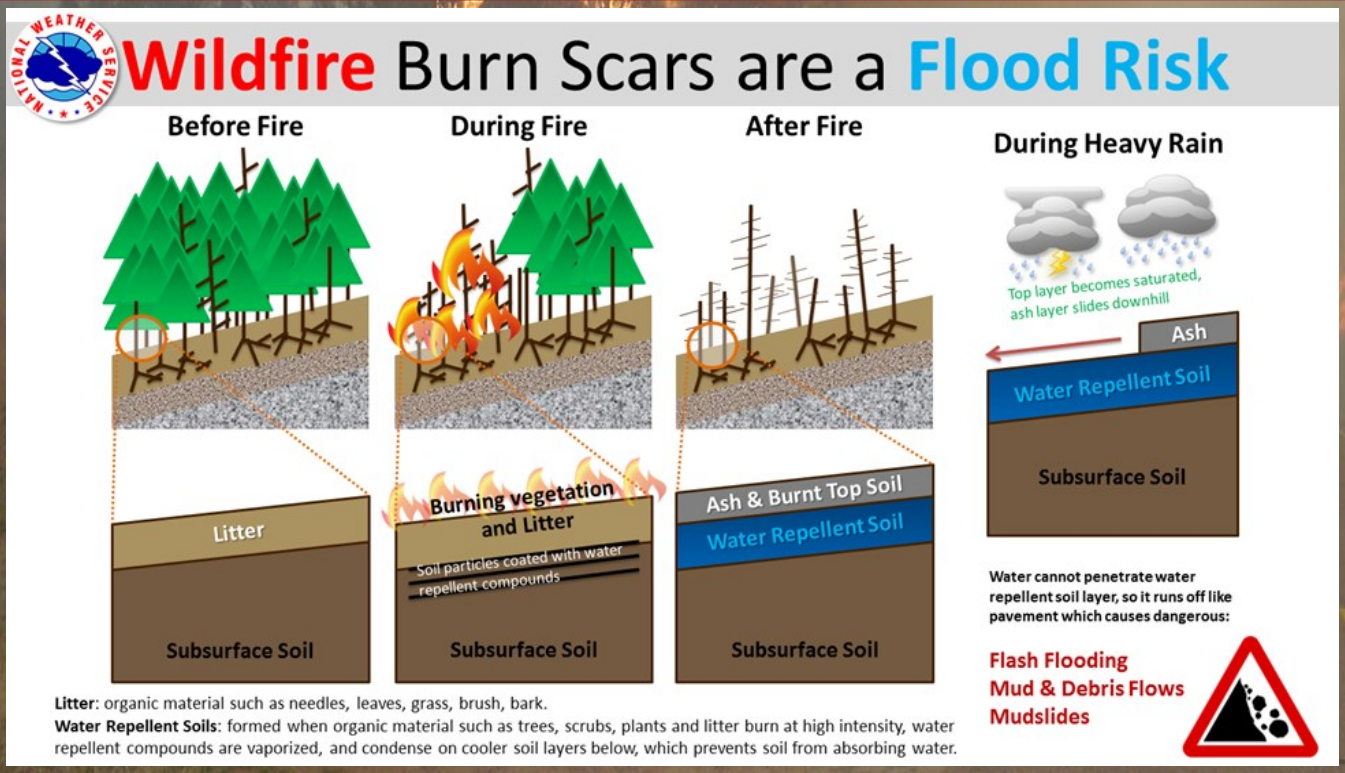
By Makoto Moore

Colorado officials predict an average or better wildfire season in 2017, but caution against complacency despite no heightened warnings this year. The forecast for an average or slightly below-average 2017 fire season is the same as a year prior, and continues a mild pattern after devastating destruction in 2012 and 2013. An average year in Colorado equates to 4,500 fires, or 100,000 acres of state-owned or private property.

The eastern half of the state faces higher risks than parts of the Western Slope, where above-average snowpack will help reduce fire chances.

In 2016, 3 large fires occurred in the WFO Pueblo county warning area, for a combined total of roughly 40,000 acres burned. They were: the Hayden Pass Fire, 20 miles SE of Salida between July 8th and October 1st, the Beulah Hill Fire, 15 miles SW of Pueblo between October 3rd and 15th, and the Junkins Fire, 11 miles E of Westcliffe between October 17th and December 15th.

However, once the fires have been contained, our work is not done. Next comes the flash flood threat. When you have a dense forest with undergrowth, you have plants and vegetation to trap moisture and rain. After a fire, when it's gone, there is nothing left to catch it. The fire also makes the ground almost hydrophobic, or water-repelling, and these effects can last 10 to 15 years.



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Watch….Warning….Advisory

WHATS THE DIFFERENCE???

How many times have you seen the TV crawler with "**National Weather Service has issued a Watch/Warning/Advisory**" and wondered

" What's the difference?"

The difference determines the risk to life and property of the citizens of the United States, and more specifically, those folks that are in the hazard area that is defined.

The National Weather Service issues a variety of products to keep our customers informed of unusual, inconvenient and hazardous weather conditions. A multi-tier concept is employed to accomplish this task with Outlooks, Watches, Warnings and Advisories to point out specific conditions.

Definitions:

Outlook: Used to give considerable lead time that a hazardous event may develop.

Watch: Issued when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, and/or timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so.

Advisory: Issued when a hazardous event is occurring or has a very high probability of occurrence. Advisories describe events that **cause significant inconvenience.**

Warning: Issued when a hazardous event is occurring or has a very high probability of occurrence. Warnings advise of a **threat to life or property**.

Here at NWS Pueblo.. we tweet and we post, using Twitter and Facebook as additional sources to reach the citizens that rely on us.

You can follow us either way, to stay in touch and stay informed, as the seasons, and weather, change.

Stay safe, Stay dry and Stay informed.

Stay up to date with your winter weather at:
WEATHER.GOV/PUB